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ABSTRACT

This document discusses the need for agree-disagree, consensus science activities for teaching students skills in resolving differences and arriving at positions acceptable to all members of a group. Three activity sets are included, each containing ten exercises. The sets deal with human problems, life style problems, and problems of scientific technological development. (SL)

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# Agree-Disagree Activities for Stimulating Student Analysis of Science Related Issues and Problems

by

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Today's world is plagued by science-related problems that diminish the quality of life as well as threaten the survival of the human species. Also, many technological and scientific advances are emerging that offer the hope of an improved existence if unintended complications and consequences do not arise from their development and utilization. Furthermore, there are many other science-related issues that may not threaten our survival but nevertheless pose difficult ethical problems.

It is increasingly evident that these problems and issues will not and cannot be resolved by politicians and experts alone. Participation by citizens in the decision-making process is essential. Decisions regarding the development and application of certain technical and scientific possibilities must involve citizens inasmuch as the lives of all could be profoundly affected by either the successes or failures of these endeavors.

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Also, many of the existing problems and issues must be solved or decided on an individual basis.

How can schools help prepare youth to make decisions on the many problems and issues they will face in their lifetime? Obviously, knowledge and cognitive skills are needed for effective decision-making. However, developing the intellect and providing knowledge are not enough. Decisions are influenced heavily by values, attitudes, and beliefs. Any preparation for a lifetime of decision-making therefore must involve continued opportunities for the examination and formulation of attitudes, values, and ethical standards.

Agree-disagree activities requiring students to reach consensus on issues and problems can provide these opportunities. In reaching consensus, students must resolve differences and arrive at a position acceptable to all group members. Inevitably, conflict will accompany the process. To avoid this conflict, groups often decide issues by simply voting and allowing the viewpoint of the majority to prevail. The result is that neither the majority or minority view has been articulated and examined. When consensus is desired, this should not occur.

Sometimes consensus cannot be reached without moving to a higher level of generality. There may be disagreement with the statement, "A law should be passed to limit families to two children," but group consensus on the more

general statement, "Incentives to limit family size should be created by the government". Also, slight word changes can be made that alleviate semantic problems that block attempts to reach consensus. The development of consensus and the avoidance of extreme conflict can be facilitated by group concentration on the factors involved in the problem and not the personality differences within the group.

Three sets of statements are included here as examples of activities requiring the development of consensus.

Set 1

Directions: Agree or disagree on each item individually. If all members of the group do not agree on an item, discuss the item and reword it so that a consensus on the item can be reached.

1. If a family can afford the cost, they should be allowed to have as many children as they want.
2. The quality of the human population should be regulated and improved by controlling who can conceive and parent children.

3. Cloning of humans, which apparently will be possible in the near future, should be banned by law in the U.S.
4. Subhumans or "parahumans" should be developed by genetic engineers for use by society for menial work and as a source of spare parts for human bodies.
5. A law should be passed to limit families to two children.
6. A constitutional amendment that would ban all abortions unless the mother's life is in danger should be enacted.
7. Women who are unable to pay for the medical costs of an abortion should receive financial assistance from state and federal medical programs.
8. Computers that can be used as boosters for the human brain should be developed and hooked to as many individuals as financially possible.
9. Legislation regulating recombinant DNA research should be enacted by local, state, and federal government.
10. Underdeveloped nations which are overpopulated, should utilize compulsory sterilization to control the population.

Set 2

Directions: Agree or disagree on each item individually. If all members of the group do not agree on an item, discuss the item and reword it so that a consensus on the item can be reached.

1. Additional taxes should be levied on gasoline so that the price will ultimately reach $1-1.50 per gallon.
2. The American life-style, characterized by comfort and convenience, is the biggest hurdle that has to be overcome if the United States is to have adequate energy resources for the future.
3. Clean-air standards should be relaxed to facilitate conversion to coal by industrial plants and utility companies.
4. The first axiom of any comprehensive energy plan must be the maintenance of jobs, the expansion of the economy, and the growth of productivity.
5. Rationing total energy use by letting the competitive price rise will reduce the U.S. need to import oil.
6. The 55 m.p.h. speed limit should be retained and more rigidly enforced.

7. Oil found in the oceans should be controlled by the United Nations with the income divided among all nations of the world through a system whereby poor nations would receive more and rich nations less.
8. Nuclear technology based on plutonium should be rejected as an energy source because of plutonium's use in nuclear bombs.
9. All controls on oil and gas prices should be lifted eventually and the market should determine prices.
10. A tax of $750 should be added to the purchase price of any new automobile that averages less than 18 miles per gallon on the 1978 EPA City/Highway Test.
11. The United States should respond with military force if the OPEC nations ban oil exports to this nation again.

Set 3

Directions: Agree or Disagree on each item individually. If all members of the group do not agree on an item, discuss the item, reword it so that a consensus on the item can be reached.

1. The FDA ruling prohibiting the use of saccaharin in soft drinks and other widely-used products should be reversed.
2. Efforts to discover life elsewhere in the universe should be intensified and expanded.
3. Cities and states confronted with a shortage of water should pass legislation restricting growth.
4. Athletes should not be permitted to use potentially harmful drugs such as steroids to build up the muscles of their bodies.
5. Lunar or planetary bases and colonies should be established.
6. Psychosurgery, which is a surgical technique sometimes used to remove portions of the brain of people with behavioral problems, should not be permitted in this nation.
7. Citizens, although not specially trained in science, should have the authority to vote to halt scientific research that is believed to present possible hazards to human life.

8. The Concorde and other supersonic aircraft should be allowed to land in the airports of major American cities.
9. Individuals or agencies of the government should be allowed to seed clouds and attempt weather-modification projects without the interference of residents in other ares.
10. Laws should be passed in all states that ban the use of throw-away containers for beverages such as beer and pop.

After establishing consensus within the groups, a general class discussion can be conducted with the groups comparing, examining, and defending the various positions they have taken.

As new issues and problems arise, new statements can be plugged into existing exercises or new exercises can be created using this format. In this way, students will have a continued opportunity to explore their values, attitudes, and beliefs in considering real problems and issues.